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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/767,894	01/22/2001	Steve McCarthy	3123-342	2562
32093	7590	03/01/2004	EXAMINER	
HANSRA PATENT SERVICES 4525 GLEN MEADOWS PLACE BELLINGHAM, WA 98226			ABRAHAM, ESAW T	
			ART UNIT	PAPER NUMBER
			2133	7
DATE MAILED: 03/01/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/767,894

Applicant(s)

MCCARTHY ET AL.

Examiner

Esaw T Abraham

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Final rejection

Response to the applicant's argument

Applicant's argument with respect to original claims 1-18, 20-24 and amended claim 19 filled on 12/16/03 has been fully considered but they are not persuasive and the previous or 102 (b) rejection to reject the claims 5,6-14, and 16-18 are withdrawn. However, upon further consideration, the claims (5,6-14, and 16-18) are rejected under 35 U.S.C. 103(a) as being unpatentable over Sobey (U.S. PN: 5, 856,986). The rejection to claims 2-4, 15, 19-24 in paper number 4 stands active.

Response to the applicant's argument

Remark to pages 8-11, the applicant argues that the prior art (Sobey) fails to disclose, "identifying dominant error". Irrespective of how the term "table 1 approximates dominant error" understood subjectively, the word "approximating" added to the phrase "dominant error probability" understood by the examiner as estimating the mathematical quantity which is close in value of the error, and approximating error probability is an important function or procedure required in most of error detecting systems. Therefore, the inclusion of the word "approximation" by the prior art (Sobey) to the phrase "dominant error probability" does not make the claims allowable over the prior art of record. This is so because the final values of the dominant errors are the functions of the approximated (estimated) values of dominant errors.

The applicant further argues that the prior art (Sobey) fails to disclose "determining a range user values corresponding to a maximum tolerable user value error". Although Sobey does not explicitly teach the term "user value", it is common in the channel communication systems to define or assign user values in relation to a specified codeword and if the range of the user value

Art Unit: 2133

passes over the pre-defined (pre-arranged) threshold value, the detector detects an error.

Furthermore, as for the limitation “maximum tolerable user value error” argued by the applicant, the maximum value of errors are directly or indirectly related to the threshold settings this is so because threshold setting values are designed to determine the ranges of any values including user values corresponding to the error values. Therefore, the applicants’ argument although acknowledged, has not been found to be convincing.

In response to the applicants’ argument that the references fail to show certain features of applicants’ invention, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although, the claims interpreted in light of the specification, limitations from the specification are not read to the claims. For example, “in the applications figure 3, flow chart step 316 the applicant disclose multiplying maximum tolerable deviation by two to obtain maximum number of code words that directly inter depend with any one of codeword and remove code words so that no code words having more than this number or directly interdependent code words remain in the code space”. See *in re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject

matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims **1, 5, 6-14 and 16-18**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sobey (U.S. PN: 5, 856,986).

As per claim **1**, Sobey teaches a method for encoding data comprising all the elements of the instant application. Sobey teaches identifying a dominant error in column 9, lines 6-7 that states table I approximates dominant error probabilities (identifying a dominant error). Sobey teaches determining a range of user values corresponding to a maximum error in column 9, lines 1-3: "Table 1 lists ... error for each type of detector over a range of threshold settings" (the threshold are a range of user values for a maximum error). Further, Sobey teaches assigning values to a first and second codeword and reading the first codeword as the second codeword based on error detection (see figure 17, elements 403, 412,422). Sobey **does not explicitly** use or teach the same term such as assigning the first and second user values to the first and second code words. **However**, it is common practice in the channel communication systems to define or assign a user value in relation to a specified codeword and if the range of the user value passes from the pre-defined (pre-arranged) threshold value, the detector detects an error. **Therefore**, it would have been obvious to a person having an ordinary skill in the art at the time the invention

Art Unit: 2133

was made to assign plurality of user values to specified code words to generate or transmit user values through a channel. **This modification** would have been obvious because a person having ordinary skill in the art would have been motivated to do so because providing a repair circuit that are detecting faults are well known futures any coding schemes used in connection with the transmission of data.

As per claims **5, 6 and 16**, Sobey teaches a plurality of user values to single code word (403) in Figure 17. Sobey teaches m-ary code in Figure 16a.

As per claims **7-9**, Sobey teaches a first dominant error that occurs with a codeword, and an error more likely to occur than any other error with the high probability of occurrence in column 9, lines 1-3 “Table 1 lists the approximate probabilities of error for each type of detector over a range of threshold settings” (the threshold are a range of user values for a maximum error).

As per claim **10**, Sobey teaches first and second dominant errors are equally likely to occur in Table 1.

As per claim **11**, Sobey teaches a channel of a computer disk drive in column 1, lines 2224: “Figure 2 illustrates a portion of a data sector... a hard disk drive” (channel of a computer disk drive).

As per claim **12**, Sobey teaches a method for developing an error minimizing code for use in connection with a system having a communications channel comprising all the elements of the instant application. Sobey teaches determining a first dominant error in column 9, lines 6-7 that states: “Table 1 approximates dominant error” (determining a dominant error). Sobey teaches determining a maximum tolerable deviation in column 10, lines 31-44: “particular 18 bit sync

Art Unit: 2133

field patterns... over the range RI ... to R4 ... is points -1 to -1 4" (determining a maximum tolerable deviation). Sobey teaches identifying a first code word and assigning the code words to Y1 a first group of interdependent code words in Table3 (column 10). Sobey teaches assigning a first set of user values to a group of interdependent code words ('403, 412,422) in Figure 17.

Sobey **does not explicitly** use or teach the same term such as assigning the first and second user values to the first and second code words. **However**, it is common practice in the channel communication systems to define or assign a user value in relation to a specified codeword and if the range of the user value passes from the pre-defined (pre-arranged) threshold value, the detector detects an error. **Therefore**, it would have been obvious to a person having an ordinary skill in the art at the time the invention was made to assign plurality of user values to specified code words to generate or transmit user values through a channel. **This modification** would have been obvious because a person having ordinary skill in the art would have been motivated to do so because providing a repair circuit that are detecting faults are well known futures any coding schemes used in connection with the transmission of data.

As per claim **13**, Sobey teaches determining a first and second dominant error in column 9, lines 6-7 states that "Table 1 approximates dominant error" (determining a dominant error).

As per claim **14**, Sobey teaches assigning second set of user values to a second set of code words in Table3 (column 10). Sobey teaches determining a maximum tolerable deviation in column 10, lines 3 1-44: "particular 18 bit sync field patterns... over the range RI ... to R4... is points - i to -1 4" (determining a maximum tolerable deviation).

As per claim 17, Sobey teaches a communication channel that tolerates received and transmitted data in column 1, lines 22-24 "Figure 2 illustrates a portion of a data sector... a hard disk drive" (data tolerant channel of a computer disk drive).

As per claim 18, Sobey teaches writing a first code word to an embedded run out correction field in Figures 1 and 2. Sobey teaches a second word received by a detector (sync detector) in Figure 7.

2. Claims 2-4, 15, 19-24, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sobey (U.S. 5,856,986) in view of Cox et al. (U.S. 6,446,234) (see paper number 4).

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Art Unit: 2133

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US PN: 6,097,320 Kuki et al.

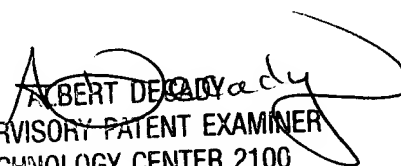
5. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Esaw Abraham whose telephone number is (703) 305-7743. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are successful, the examiner's supervisor, Albert DeCady can be reached on (703) 305-9595. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.


Esaw Abraham

Art unit: 2133


ALBERT DECADY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100